

REMARKS

Objection to the Drawings

In the Office action referenced above, Figure 1 of the drawings was objected to as failing to show text labeling for items 66a; 60 a,b; 62 a,b; 64 a,b; 22; 24; 66b; 12; 14; and 16 as described in the specification. A corrected drawing sheet of Figure 1 showing the required text labeling in compliance with 37 CFR 1.121(d) is attached. The corrected drawing sheet is labeled "Replacement Sheet" in the page header as per 37 CFR 1.84(c). Accordingly, the objection to the drawings should be withdrawn.

Rejection of Claim 46 Under 35 U.S.C. 112

Also in the Office action, dependent claim 46 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for not having proper antecedent basis for "bus controller" in lines 6 and 7 thereof. In response, dependent claim 46 was amended to change the term "bus controller" to -- communication controller -- which has proper antecedent basis in the claim. Accordingly, the indefiniteness rejection of claim 46 should be withdrawn.

Claims 1-15 and 16-29

There were 58 claims of the instant application examined in the above-identified Office action. Claims 1-15 recited a fire detector unit for detecting fire in a region and claims 16-29 recited a counterpart method. In the aforementioned Office action, claims 1, 4, 10 and 15 to a fire detector unit and counterpart method claims 16, 19, and 25 were rejected under 35 U.S.C. 102(e) as being anticipated by Ohmi et al. (USP No. 6,622,543). In addition, dependent claims 9 and 24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. Moreover, dependent claims 2, 3, and 5-8 and claims 17, 18, and 20-23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Thuillard et al. (USP No. 6,788,197). Still further, dependent claims 11, 12 and 26, 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Consadori et al. (USP No. 5,526,280). Dependent claims 13, 14 and 28, 29 were considered allowable.

In response, independent claims 1 and 16 were amended to render the recitation thereof distinguishable over the cited references. Support for the amendments to claims 1 and 16 are found in dependent claims 8 and 23, respectively, and in the specification starting at paragraph 83 on page 24 through to paragraph 91 on page 27 and in Figure 21A. Dependent claims 2, 3, 8 and 17, 18, 23 were also amended to render the recitation thereof consistent with the amendments made to their respective parent claims. Support for these amendments are also found in the specification from paragraph 83 to paragraph 91 and in Figure 21A. Dependent claims 4-7 and 19-22 were cancelled. The dependent claims 9-15 and 24-29 remain as originally filed. Applicants contend that the amended and remaining claims 1-3, 8-18, and 23-29 are all patentably distinguishable over the aforementioned references cited against the claims and offer the following remarks in support of this position.

Ohmi et al. is directed to a gas detecting sensor for the detection of a flammable gas, like hydrogen or oxygen, in water or other gases to ensure the safety of a the production equipment and facilities in the manufacture of semiconductors (see col. 1, lines 5-13). Ohmi's flammable gas detector (1, Fig. 1) includes a gas detection sensor (2) and a detection unit (3). The gas detection sensor (2, Fig. 1) comprises first (5) and second (6) detection sensors disposed in a sensor block (7) through which gas or fluid flows in a channel (7a-c). The first detection sensor includes a diaphragm having a platinum coating on a surface in contact with the flowing gas and a thermocouple fixed in close position to the diaphragm to measure the temperature thereof. The second detection sensor is identical to the first, but without the platinum coating, and is used as a reference to the first detection sensor. The sensor utilizes contact catalytic reaction between the platinum coating and the flammable gas and produces separate temperature/voltage signals from the two thermocouples. The voltage outputs of the two thermocouples are subtracted in the detection unit to produce a difference signal representative of the concentration of flammable gas (see Fig. 1 and the graphs of Fig's 6-8).

Thuillard et al. is directed to a fire alarm unit (see Fig. 1) comprising an optical smoke detector (5), a CO combustion gas sensor (12) and a thermistor temperature sensor (13), the output signals of which being input to an electronic evaluator (6). The unit (6) evaluates the signals from the various sensors to determine the type of fire (see Table 1, col. 4). The alarm unit

consists of a base (2), a cover (3) which has openings (4) directed to the room to be monitored.

Consadori et al. is directed to a method and system for gas detection whose purpose is to protect humans against the inhalation of unsafe amounts of CO in the air (see col. 3).

Consadori's system is principally concerned with concentration levels of CO over a period of time to protect humans against an imminent toxic concentration thereof which could be fatal (see col. 5, lines 20-30). Consadori et al. do not teach or suggest the application of their system for fire detection.

In contrast, amended independent claims 1 and 16 recite, in substance, a fire detector unit and method that includes the generation of a temperature compensated concentration level of a monitored combustion chemical based on a function of the first and second parameter readings and a selected one of first (α_1) and second (α_2) temperature factor values wherein each said first and second temperature factor value being based on first parameter measurements corresponding to a plurality of predetermined combustion chemical concentration levels (R50, R100, R300), and the generation of an alarm based on the generated temperature compensated concentration level. None of the cited art of Ohmi et al., Thuillard et al. or Consadori et al. either taken individually or in combination teach or suggest the aforementioned recitation.

In addition, dependent claims 2 and 17 recite the storage of temperature compensated, gas concentration levels in look-up tables for each of the first and second temperature factor values, the selection of a look-up table and the utilization of the selected look-up table to generate the temperature compensated concentration levels. Dependent claims 3 and 18 recite the generation of the temperature compensated gas concentration levels of each look-up table based on a function of the parameter reading and the corresponding temperature factor value which is determined from a parameter reading corresponding to first and second predetermined combustion chemical concentrations associated with the temperature reading. None of the cited art of Ohmi et al., Thuillard et al. or Consadori et al. either taken individually or in combination teach or suggest the aforementioned recitation of dependent claims 2, 3 and 17, 18.

Still further, dependent claims 8 and 23 recite the storage of data representative of a first temperature factor value vs. temperature curve and a second temperature factor value vs. temperature curve and accessing a selected one of the first and second temperature factor values

from the stored data based on the temperature measurement reading. None of the cited art of Ohmi et al., Thuillard et al. or Consadori et al. either taken individually or in combination teach or suggest the aforementioned recitation of dependent claims 8 and 23.

Accordingly, claims 1-3, 8 and 16-18, 23 are all considered patentably distinguishable over the references Ohmi et al., Thuillard et al. or Consadori et al. either taken individually or in combination. The remaining dependent claims 9-15 and 24-29 are all dependent from amended independent claims 1 and 16, respectively, and include all of the limitations thereof, and thus, are considered patentably distinguishable over the same references for at least the same reasons given for their respective parent claims.

Claims 30-41

Further, in the Office action, independent claim 30 and claims 33, 34 and 35 dependent therefrom were rejected under 35 U.S.C. 102(e) as being anticipated by Ohmi et al. Moreover, claims 32 and 36-41, all dependent either directly or indirectly from claim 30, were rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Thuillard et al. Still further, dependent claim 31 was rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Consadori et al.

In response, independent claim 30 which recites a method of calibrating a fire detector unit was amended to render the recitation thereof patentably distinguishable over the aforementioned references. Also, dependent claims 34, 35 and 41 were amended to render the recitation thereof consistent with the amendments of their parent claim 30. Support for these amendments are found in the same section of the specification as referenced herein above for the amendments to claims 1 and 16. The remaining claims 31-33 dependent from claim 30 were left as originally filed and claims 36-40 were cancelled. Amended claim 30 and the amended and remaining claims dependent therefrom are all considered patentably distinguishable over the references Ohmi et al., Thuillard et al. or Consadori et al. either taken individually or in combination and the following remarks are offered in support of this position.

Amended claim 30 recites, in substance, that first ($\alpha 1$) and second ($\alpha 2$) temperature factors are derived at a plurality of second temperatures based on the created measured parameter

vs. temperature curve data and that first and second look-up tables of temperature compensated gas concentration levels are created from the measured parameter vs. temperature curve data and the corresponding derived first and second temperature factors. Amended dependent claim 34 recites that the first temperature factors are derived based on a function of sensor parameter measurements at first and second predetermined chemical concentration levels and corresponding second temperatures. Amended dependent claim 35 recites that the second temperature factors are derived based on a function of sensor parameter measurements at second and third predetermined chemical concentration levels and corresponding second temperatures. And, amended dependent claim 41 recites that the first and second look-up tables are stored in the fire detector unit.

None of the cited references of Ohmi et al., Thuillard et al. or Consadori et al. either taken individually or in combination teach or suggest the aforementioned recitation of amended claim 30 and dependent claims 34, 35 and 41. In addition, since the remaining dependent claims 31-33 include the limitations of their parent claim, they are also considered patentably distinguishable over the same references for at least the same reasons given for the parent claim.

Claims 42-49

Still further, in the Office action, independent claim 42 and claims 43-49 dependent therefrom were all rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. in view of Thuillard et al. Applicants have amended independent claim 42 to be consistent with the amendments to claims 1 and 16 described supra. Support for the amendments to claim 42 is the same as stated herein above for claims 1 and 16. Applicants traverse the rejection of amended claim 42 and claims 43-49 dependent therefrom and offer the following remarks in support of this position.

As noted above, the gas detection sensor of Ohmi et al. is not a fire detector unit, but rather used to detect the concentration of a flammable gas and protect against an unsafe buildup of the flammable gas, mainly in the manufacture of semiconductors. In this application, Ohmi et al. use a first sensor with a coating of platinum which becomes heated by the contact catalytic reaction of the flammable gas, and a second sensor without the platinum coating which acts as a

reference to the first sensor. The outputs of the two sensors are subtracted from each other to produce a difference signal which is proportional to the concentration of the flammable gas. No fire detection is taught or suggested.

Thuillard et al. do teach a fire detector unit including an optical smoke detector, a CO detector and a temperature detector which all feed into an electronic evaluator for use in determining the type of fire. Thuillard et al. do not teach or suggest generating a temperature compensated CO concentration level for use by the evaluator. It is asserted that the teachings of Ohmi et al. and Thuillard et al. may be combined to render independent claim 42 obvious in view thereof. However, how it renders claim 42 obvious is not quite clear.

Apparently, it is proposed that the gas detection sensor of Ohmi may be substituted for the CO sensor of Thuillard to render the fire detector unit of claim 42 obvious. However, there is no teaching or suggestion in Ohmi to apply its gas detection sensor to a fire detector unit, nor is there a teaching or suggestion of how this may be accomplished. Note that Ohmi does not teach or suggest the measurement of concentration of CO gas, but rather teaches only the measurement of a flammable gas concentration. Thuillard et al. uses its CO sensor as a measure of combustion by-product and not as a measure of flammable gas buildup. Thus, there is motivation in Thuillard to suggest the need for the gas detection sensor of Ohmi. Ostensibly, there is no motivation provided in either reference for the asserted combination. Since the instant application provides the only motivation for combining the references, the combination of the two references is considered improper. Therefore, it is respectfully requested that the rejection of claims 42-49 be withdrawn as a result of the application of an improper combination of references.

Suppose for argument sake that the gas detection sensor of Ohmi could be substituted for the CO sensor of Thuillard, the combination will not render claim 42 obvious because claim 42 has been amended to recite the same limitation as recited in amended claims 1 and 16 except for a plurality of chemical sensors. Any proposed combination of Ohmi and Thuillard would at most, if at all, lead to a temperature compensated concentration level of a single gas. There is no teaching or suggestion in Ohmi or Thuillard of extending a fire detector unit to a plurality of chemical sensors for detecting different combustion chemical gases as recited in claim 42. Thus, amended claim 42 is patentably distinguishable over Ohmi et al. in view of Thuillard for at least

the same reasons given above for amended claims 1 and 16.

Claim 42 also recites that the processor is operative to generate an alarm based on a combination of the smoke alarm reading and the generated temperature compensated concentration levels of the chemical sensors of the plurality. The teaching of Thuillard is content with determining the types of fires (see Table 1, col. 4) with the measured concentration level of a single combustion gas (CO). Accordingly, there is no suggestion or motivation in Thuillard to improve the type of fire determinations with a plurality of combustion chemical gas sensors. In addition, there is no suggestion or motivation in Ohmi to do the same. Thus, for at least the above given reasons, claim 42 is patentably distinguishable over the combination of Ohmi and Thuillard if deemed proper.

Since claims 43-49 are all dependent, either directly or indirectly, from independent claim 42, then, for at least the same reasons given for their parent claim 42, dependent claims 43-49 are all patentably distinguishable over the combination of Ohmi and Thuillard if deemed proper. In addition, dependent claims 43-49 recite limitations that are patentably distinguishable in their own right over the proposed combination of Ohmi and Thuillard.

For example, dependent claim 45 recites means for inhibiting the generation of the fire alarm signal based on the first and second fault signals. Thuillard's text starting at col. 4, line 53 and continuing over to col. 5, line 3 merely describes a diagnostic unit 14 in Figure 2 that analyzes the smoke, gas concentration and temperature signals to determine the type of fire present. Thuillard's text in col. 5, lines 30-33 merely suggests that the controller can also be used for indicating problems with the sensors, but not to inhibit the generation of the fire alarm. The examiner's remaining remarks are without the required support.

Another example is found in claim 46 which recites, a communication bus, a communication controller and transmitter, and a processor circuit for converting the fire alarm and fault signals into corresponding fault messages and means for controlling the communication controller and transmitter for transmitting the alarm and fault signals over the communication bus. The examiner's reference to the elements of Ohmi's Figure 1 is without merit. All such elements are within the detection unit 3 of Ohmi's sensor and do not communicate alarm and fault signals or perform the functions recited in dependent claim 46.

Accordingly, it is respectfully requested that the obviousness rejection of claims 42-49 based on Ohmi et al. and Thuillard et al. be withdrawn.

Claims 50-58

In the Office action, claims 50-58 were allowed.

Allowed Dependent Claims 13, 14 and 28, 29


Still further, in the Office action, dependent claims 13, 14 and 28, 29 were considered allowable if rewritten in independent form. In response, dependent claims 13 and 28 were rewritten in independent form as new independent claims 59 and 61 which include the relevant limitations of the base and intervening claims of claims 13 and 28, respectively. New claims 60 and 62 dependent from claims 59 and 61, respectively, recite the limitations of the respective dependent claims 14 and 29. Accordingly, new claims 59-61 should all be allowable.

Other References

The references not cited against the claims, but made of record in the above-identified Office action, are not considered to materially affect the patentability of the amended and remaining claims of the instant application.

In view of the above, all of the amended and remaining claims of the instant application are patentably distinguishable over the cited references and the instant application is condition for allowance. Therefore, it is respectfully solicited that the instant application be given an early issuance.

Respectfully submitted,



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